

WHAT IS CLAIMED IS:

## 1. An optical transmitter comprising:

a modulation signal source for outputting modulation signals of a predetermined frequency;

a semiconductor laser source driven by said modulation signals outputted from said modulation signal source to output laser light modulated according to said modulation signals; and

an optical amplifier for amplifying the laser light from said semiconductor laser source,

wherein a ratio of an amplitude modulation depth of amplified laser light outputted from the optical amplifier, to an amplitude modulation depth of the laser light inputted into said optical amplifier, is set in the range of 60% or less.

## 2. The optical transmitter according to Claim 1, further comprising:

a signal source for outputting signals to be transmitted, in the form of an electric signal; and

an external modulator which is provided on a transmission line between said semiconductor laser source and said optical amplifier, which amplitude-modulates the laser light outputted from the semiconductor laser source, based on the electric signals outputted from said signal source, and which outputs the amplitude-modulated laser light as light including signals to said optical amplifier.

3. The optical transmitter according to Claim 1, wherein said predetermined frequency is 20 kHz or less.

4. The optical transmitter according to Claim 1, wherein said optical amplifier comprises an erbium-doped optical fiber.

5. An optical communication system comprising:  
the optical transmitter as set forth in Claim 1;  
an optical transmission line through which light signals outputted from said optical transmitter propagates;  
and

an optical receiver for receiving said light signals having propagated through said optical transmission line.

6. An optical transmitter comprising:  
a modulation signal source for outputting modulation signals of a predetermined frequency;

a semiconductor laser source driven by said modulation signals outputted from said modulation signal source to output laser light modulated according to said modulation signals;

an optical amplifier for amplifying the laser light from said semiconductor laser source; and

a modulation depth control system for controlling a ratio of an amplitude modulation depth of amplified laser light outputted from the optical amplifier, to an amplitude modulation depth of the laser light inputted into said optical amplifier in the range of 60% or less.

7. The optical transmitter according to Claim 6, further comprising:

a signal source for outputting signals to be transmitted, in the form of an electric signal; and

an external modulator which is provided on a transmission line between said semiconductor laser source and said optical amplifier, which amplitude-modulates the laser light outputted from the semiconductor laser source, based on the electric signals outputted from said signal source, and which outputs the amplitude-modulated laser light as light including signals to said optical amplifier.

8. The optical transmitter according to Claim 6, wherein said predetermined frequency is 20 kHz or less.

9. The optical transmitter according to Claim 6, wherein said optical amplifier comprises an erbium-doped optical fiber.

10. An optical communication system comprising:  
the optical transmitter as set forth in Claim 6;  
an optical transmission line through which light signals outputted from said optical transmitter propagates;  
and

an optical receiver for receiving said light signals having propagated through said optical transmission line.

11. An optical transmitter comprising:

a modulation signal source for outputting modulation signals of a frequency not more than 20 kHz;

a semiconductor laser source driven by said modulation signals outputted from said modulation signal source to output laser light modulated according to said modulation signals; and

an optical amplifier for amplifying the laser light from said semiconductor laser source,

wherein a modulation depth of said laser light is 10% or less at an output end of said optical amplifier.

12. The optical transmitter according to Claim 11, further comprising:

a signal source for outputting signals to be transmitted, in the form of an electric signal; and

an external modulator which is provided on a transmission line between said semiconductor laser source and said optical amplifier, which amplitude-modulates the laser light outputted from the semiconductor laser source, based on the electric signals outputted from said signal source, and which outputs the amplitude-modulated laser light as light including signals to said optical amplifier.

13. The optical transmitter according to Claim 11, wherein said optical amplifier comprises an erbium-doped optical fiber.

14. An optical communication system comprising:  
the optical transmitter as set forth in Claim 11;  
an optical transmission line through which light signals outputted from said optical transmitter propagates;

and

an optical receiver for receiving said light signals having propagated through said optical transmission line.

15. An optical transmitter comprising:

a modulation signal source for outputting modulation signals of a frequency not more than 20 kHz;

a semiconductor laser source driven by said modulation signals outputted from said modulation signal source to output laser light modulated according to said modulation signals;

an optical amplifier for amplifying the laser light from said semiconductor laser source; and

a modulation depth control system for controlling a modulation depth of said laser light in the range of 10% or less at an output end of said optical amplifier.

16. The optical transmitter according to Claim 15, further comprising:

a signal source for outputting signals to be transmitted, in the form of an electric signal; and

an external modulator which is provided on a transmission line between said semiconductor laser source and said optical amplifier, which amplitude-modulates the laser light outputted from the semiconductor laser source, based on the electric signals outputted from said signal source, and which outputs the amplitude-modulated laser light as light including signals to said optical amplifier.

17. The optical transmitter according to Claim 15, wherein said optical amplifier comprises an erbium-doped optical fiber.

18. An optical communication system comprising:  
the optical transmitter as set forth in Claim 15;  
an optical transmission line through which light signals outputted from said optical transmitter propagates;  
and

an optical receiver for receiving said light signals having propagated through said optical transmission line.